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SPOTLIGHT

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Manufacturers have unique and complex ecosystems of partners and can benefit from data integrations across these extensive partner networks to unlock supply chain visibility and intelligence.

Collaboration at Scale to Speed Insights Across Manufacturing Supply Chains

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Introduction

Disruptive events are ever present in global supply chains, something that has been long known but generally accepted as the underlying risk present in operating extended global networks. With resource scarcity, geopolitical conflicts, a pandemic, logistics congestion, equipment constraints, labor shortages, and supply chain security on the short list of a string of recent disruptions, organizations have been left struggling to cope with rising costs, unreliable transportation services, and unpredictable supply and demand patterns.

AT A GLANCE

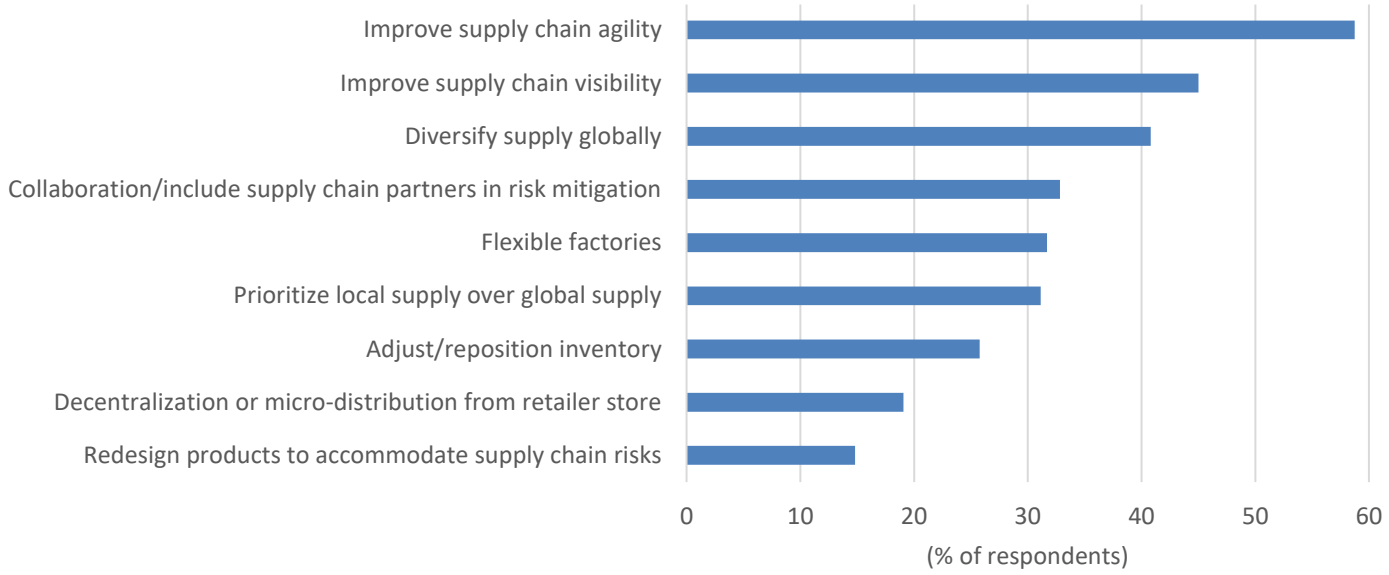
KEY STATS

- 46% of manufacturers lack the appropriate visibility and agility to effectively see and respond to changes in their supply chain.
- 30% of manufacturers indicated a lack of collaboration across suppliers/customers is a problematic gap in their supply chain.

The direct impact of broken supply chains has strained manufacturers more than ever before. Forced to accept significant price increases, manufacturers shifted their organizational strategies toward ensuring continuity of supply. According to IDC's 2022 *Global Supply Chain Survey* of 591 respondents across North America, Europe, and Asia, tactics such as geodiversified sourcing footprints, just-in-case inventory strategies, and a focus on increased data visibility and agility are being prioritized by manufacturers that are focused on cultivating supply chain resilience while under pressure to support revenue assurance models for their companies' financials (see Figure 1).

FIGURE 1: ***Cultivating Supply Chain Resilience***

Q What steps are manufacturers taking to mitigate risk in their supply chains?



n = 591

Source: IDC's Global Supply Chain Survey, 2022

As this focus takes shape, an interesting pull between resilience and efficiency is surfacing due to rising economic pressures. Generating intelligence to get their arms around the things that they can control and working to better understand (and quantify) the things that they cannot is a significant challenge for manufacturers, particularly in an environment where striking the appropriate balance is unique to the individual products being sourced and produced. Dynamically managing these factors across hundreds, often thousands, of components and materials requires both a significant effort and the appropriate digital tools if intelligent, data-based decision making is to be more than aspirational.

Manufacturers relying on extended global supply chains have reached an inflection point as it is now widely accepted that these risks must be addressed and managed proactively through data, not waited out once disruption occurs. Successfully operating a supply chain in an increasingly dynamic environment demands organizations focus on generating end-to-end (E2E) visibility across their supply chains. This journey begins across business functions within their organization, is extended through supply chain partners with increased collaboration, and advances further by incorporating data to account for externalities that can be the difference between success and failure in supply chain operations.

Traditional data integration is failing to meet these new business requirements that demand automated, scalable, and secure platforms that unify enterprise systems alongside sourcing partners and logistics providers to ensure real-time access and visibility. Top business challenges for manufacturers include a lack of accurate E2E visibility and reporting and difficulty integrating and normalizing disparate data coming from internal and external sources from legacy systems that reside on premises to the cloud.

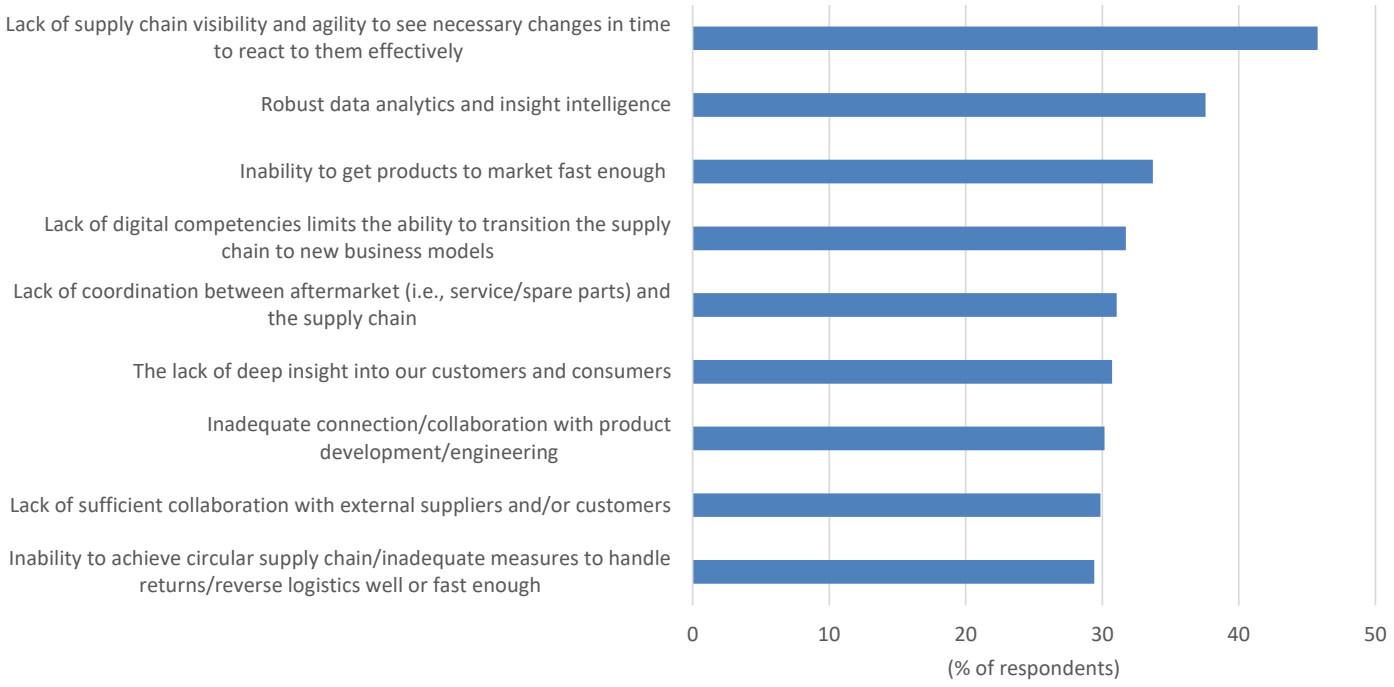
Maturing an organization beyond manual processes for data manipulation and corrections is difficult in an environment where talent is scarce and data quality issues persist across disparate sources. It is essential to find a path to operationalize and scale data usage to ensure value is realized and measured. Being able to use analytics to support the business by reducing time to decision creates a distinct competitive advantage.

Industry 4.0 Demands a Connected Supply Chain Supporting Real-Time Intelligence

A range of technologies are opening the door for manufacturers to address risks and integrate supply chain activities with internal operations. A digital-first supply chain will include a mix of Internet of Things (IoT), cloud computing, artificial intelligence (AI), and machine learning (ML), edge computing, digital twin, and cybersecurity technologies to increase collaboration and sharpen a manufacturer's supply chain into a competitive advantage. However, there are considerable gaps that, if left unaddressed, will be problematic for manufacturers, according to IDC's 2022 *Global Supply Chain Survey* (see Figure 2). Among these gaps is the ability to identify and respond to changes, the ability to create robust insight intelligence, and insufficient collaboration with suppliers and/or customers.

FIGURE 2: ***Potential Supply Chain Challenges***

Q ***As you think about the future of your supply chain, what current gaps are likely to be the most problematic if not addressed?***



n = 591

Source: IDC's Global Supply Chain Survey, 2022

Although point solutions may work perfectly well for their intended purpose, they must be integrated to form a holistic view across the supply chain. This requires synthesizing data (live and historical) from disparate sources and deploying a combination of technologies specific to the needs of the organization. Doing so opens the door to the creation of a modern control tower, providing real-time visibility that goes beyond optimization and becomes an engine for growth.

Extended visibility enables automated decision making through technologies that initiate a maturation from decisions based on descriptive statistics (what has happened) to decisions that become predictive (what will happen) and finally prescriptive (crafting what you would like to happen) across functions and organizations, accelerating time to value. Maintaining data quality standards across platforms becomes critical if insights are intended to provide meaningful business outcomes. Integrating and controlling internal data sources (enterprise systems, TMS, OMS, WMS, YMS), reaching further to include close partners (suppliers, logistics service providers), and expanding the circle further to include additional external data sources (news feeds, weather forecasts) provide a foundation for continuous improvement as specific variables become more or less relevant over time and are incorporated accordingly.

As these integrations are refined, a supply chain can become collaborative at scale, optimizing data-driven decisions across organizations and functions. Establishing a single source of truth provides the basis for organizations to begin operating from the same playbook, improving decisions across supply chain functions, including:

- Demand sensing and forecasting
- Extended (continuous) S&OP
- Inventory optimization and deployment
- Intelligent sourcing
- Supplier network monitoring
- Transportation optimization
- Global trade optimization
- Smart warehousing

Becoming fully integrated across functions and enterprises opens the door to continuous optimization and informed decisions through automated AI/ML technology, upskilling employees through low-code/no-code applications, and democratizing data across and between organizations. Gaps where labor shortages exist can be filled with technology, freeing scarce labor to focus on more value-added tasks and helping reduce attrition in an environment where it is difficult to attract and retain talent. The intent is to create a holistic, customer-centric supply chain where orchestration becomes possible, from first mile to last mile, through an iterative approach where incremental improvements can potentially yield millions in savings.

Benefits

Manufacturers that enable the sharing of data across their supply chain ecosystem can reap the benefits of improved visibility, opening the door to feed analytics models to become predictive where possible and fast where not possible. This is incredibly important in an environment where the value of data rapidly degrades with time and time to decision becomes critical to resource allocation, both within an organization and among its supply chain partners.

Connecting multiple data sources, from databases to apps, creates a single source of truth that can be leveraged across business functions and between organizations to improve demand forecasting, capacity planning, product safety, inventory management, maintenance, and service decisions. Doing so without the need to replace or re-architect entire systems saves money and speeds the deployment of actionable insights across organizations. This creates a distinct competitive advantage where trade-offs are understood across business functions and stakeholders begin pulling in the same direction.

Architecting process flow — from getting the data necessary and applying the right analytics to deriving an outcome and pushing it into an operational system — empowers employees at all levels of the organization to identify and act on opportunities to create instant value. An iterative, scalable approach that grows organically across the supply chain delivers consistent and timely intelligence to ensure continuity to manufacturing operations.

Considering Fivetran with High-Performance Cloud Destinations such as Snowflake

Fivetran automated data integration is designed to deliver ready-to-use connectors, transformations, and analytics templates that adapt as schemas and APIs change, ensuring reliable data access. Its automated data movement solutions connect data silos and centralize all data. The company's SAP data replication solution simplifies integration across a hybrid data landscape to provide complete visibility, access, and collaboration, which is key for manufacturers. The high-performance log-based change data capture (CDC) technology is a nonintrusive and asynchronous replication method that reduces the load on the source system, and its intent is to enable optimum efficiency for continuous integration of large volumes of data. Fivetran supports data replication from SAP, Oracle, IBM, and other data sources to various cloud destinations such as Snowflake to deliver better business insights faster.

Establishing a single source of truth provides the basis for organizations to begin operating from the same playbook, improving decisions across supply chain functions.

Challenges

Creating a unified view across connected systems can be difficult, particularly across a robust supplier base and global transportation networks where events are inconsistently reported from one provider to the next. Developing the mechanics to integrate disparate data systems while maintaining data integrity/hygiene is a significant challenge to cultivating insights that are meaningful and relevant to business.

Shortening implementation periods to days rather than months is another key challenge. Scalable algorithms can facilitate organizational growth but can be deployed only as fast as all relevant data is aggregated into one source. Platforms that prove to be resilient and simple allow organizations to capitalize on the timeliness and relevance of insights generated by less sophisticated users who may otherwise deliver questionable intelligence from an analytics toolkit.

Streamlining the people-process-technology equation allows stakeholders to take advantage of expansive data sets such as Snowflake as they work to account for externalities that pose a risk to supply chain operations. This facilitates organic growth within and across organizations, allowing a data movement platform such as Fivetran to become a trusted source of continuous improvement and risk avoidance across their supply chain.

Conclusion

Organizations have overwhelmingly prioritized building resilience into their supply chains as the consequences of persistent disruption demands attention, and manufacturers are no exception. Implementing systems to increase data visibility and extend their view across their suppliers has become critical because a failure across any one of these nodes can have dire consequences for organizational performance. A certain level of trust and collaboration between supply chain partners is required alongside the digital tools to aggregate and process data to bring objective, evidence-based decision making to the fore in supply chain operations.

Reduced data latency facilitates timely insights, which is critical to understanding where risk is present to ensure scarce resources can be secured or deployed effectively. It is no longer acceptable to segment ownership across the supply chain and firefight once disruption is experienced as the opportunity to positively impact the situation will almost certainly have passed. Generating a holistic data-driven view across a manufacturer's supply chain is increasingly important to sustaining long-term success. Ensuring that problems (and opportunities) are visible, swiftly analyzed for optimality, and acted upon accordingly provides a foundation from which supply chain operations can become a distinct competitive advantage for manufacturers.

About the Analyst

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Travis Eide is the research director of the IDC Worldwide Supply Chain Strategies Program, responsible for providing research, analysis, and guidance on key business and IT issues pertaining to manufacturing, retail, and healthcare supply chains. He currently leads the Worldwide Supply Chain Strategies: Transportation, Logistics, and Global Trade Management practice, providing fact-based research, analysis, and insight on best practices and the use of information technology to assist clients in improving their capabilities in these critical supply chain fulfillment areas.

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Fivetran is a global leader in modern data integration. Our mission is to make access to data as simple and reliable as electricity. Built for the cloud, Fivetran enables data teams to effortlessly centralize and transform data from hundreds of SaaS and on-prem data sources into high-performance cloud destinations, such as Snowflake. Fast-moving startups to the world's largest companies use Fivetran to accelerate modern analytics and operational efficiency, fueling data-driven business growth. Fivetran is headquartered in Oakland, California, with offices around the world. For more information, visit www.fivetran.com.

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